

Amendments to the Claims:

A clean version of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR § 1.121(c)(3). This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method of producing an object data set describing a straightened reformat from an original object data set containing an ~~elongate~~ elongated subject, from which an initial cross sectional slice is created transverse to the ~~elongate~~ elongated subject and at least one further cross sectional slice is created transverse to the ~~elongate~~ elongated subject, ~~characterized in that, the~~ method comprising:

determining a reference direction ~~is determined~~ in each cross sectional slice~~[[,]]~~; and

creating the object data set ~~is created~~ by concatenating the cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned.

2. (Currently amended) A The method as in claim 1, ~~characterized in that the~~ determination of wherein determining the reference direction in each cross sectional slice comprises; ~~the method of~~

determining an initial reference direction in the initial cross sectional slice, and
deriving the a reference directions direction in the at least one further cross sectional slices slice from the initial reference direction by propagation.

3. (Currently amended) A The method as in claim 2, ~~characterized in that~~ wherein the determined initial reference direction is propagated directly into each of the at least one further slices slice.

4. (Currently amended) A The method as in claim 2, ~~characterized in that~~ wherein the initial and the at least one further cross sectional slices form a consecution of successive cross sectional slices and the reference direction in each ~~cross sectional slice in~~ of the at least one further cross sectional ~~slices~~ slice is derived from the reference direction in the a preceding slice by propagation.

5. (Currently amended) A The method as in claim 1, ~~characterized in that the~~ determination of wherein determining the reference direction in each cross sectional slice comprises: ~~the method of~~

determining a first reference direction in a ~~first~~ the initial cross sectional slice, independently determining a final reference direction in a final cross sectional slice, so that there is at least one intervening cross sectional slice between the ~~first~~ initial and the final cross sectional slices,

deriving the reference ~~directions~~ direction in each of the at least one intervening cross sectional ~~slices~~ slice by optimizing the a change of reference direction throughout the at least one intervening cross sectional ~~slices~~ slice while using the ~~first and final~~ reference directions in the ~~first~~ initial and final cross sectional slices as boundary conditions.

6. (Currently amended) ~~An optimization of the change of reference direction~~ The method as in claim 5, ~~characterized in that, the~~ wherein the change of reference direction is optimized by minimizing a change in relative orientation between any two consecutive the reference directions of consecutive cross sectional slices from the first reference direction in the ~~first~~ initial cross sectional slice to the final reference direction in the final cross sectional slice ~~is minimized~~.

7. (Currently amended) A The method as in claim 5, ~~characterized in that, An~~ wherein an additional cross sectional slice is chosen from the ~~group of~~ at least one intervening cross sectional ~~slices~~ slice between the ~~first~~ initial and the final cross sectional slices, an additional reference direction is determined in the additional

cross sectional slice, the reference directions in the intervening cross sectional slices between the first initial and the additional cross sectional slice and between the additional and the final cross sectional slices are derived by optimizing the change of reference direction throughout the cross sectional slices while using the first, additional and final reference directions as boundary conditions.

8. (Currently amended) A The method as in claim 1, ~~characterized in that the~~
further comprising:

aligning the cross sectional slices ~~are aligned~~ within the object data set describing the straightened reformat in such a way that their respective reference directions are at the same angular orientation within the object data set.

9. (Currently amended) The method as in claim 1, further comprising:
~~display of an~~ displaying object data set ~~created according to claim 1~~
describing the straightened reformat.

10. (Canceled)

11. (Canceled)

12. (New) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices, including determining an initial reference direction associated with an initial cross sectional slice of the plurality of cross sectional slices and deriving reference directions corresponding to remaining cross sectional slices of the plurality of cross sectional slices from the initial reference direction by propagation;

concatenating the plurality of cross sectional slices; and
aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein the plurality of cross sectional slices form a consecution of successive cross sectional slices, and the reference directions corresponding to the remaining cross sectional slices are each derived from the reference direction corresponding to a preceding cross sectional slice by propagation.

13. (New) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices;

concatenating the plurality of cross sectional slices; and

aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein determining the plurality of reference directions comprises:

determining a first reference direction corresponding to a first cross sectional slice of the plurality of cross sectional slices;

independently determining a final reference direction corresponding to a final cross sectional slice of the plurality of cross sectional slices, at least one intervening cross sectional slice being between the first cross sectional slice and the final cross sectional slice; and

deriving a plurality of intervening reference directions corresponding to a plurality of intervening cross sectional slices by optimizing changes associated with the intervening reference directions, using the first reference direction and the final reference direction as boundary conditions.

14. (New) The method of claim 13, wherein optimizing the changes associated with the intervening reference directions comprises minimizing a change in relative orientation between the reference directions of consecutive cross sectional slices from the first reference direction corresponding to the first cross sectional slice to the final reference direction corresponding to the final cross sectional slice.

15. (New) The method of claim 13, further comprising:
selecting an additional cross sectional slice from the plurality of intervening cross sectional slices and determining an additional reference direction corresponding to the additional cross sectional slice,
wherein the intervening reference directions corresponding to the remaining intervening cross sectional slices between the first cross sectional slice and the additional cross sectional slice and between the additional cross sectional slice and the final cross sectional slice are derived by optimizing changes associated with the intervening reference directions, using the first reference direction, the additional reference direction and the final reference direction as boundary conditions.

16. (New) A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating an initial cross sectional slice and at least one further cross sectional slice transverse to the elongated subject;
determining a reference direction in each cross sectional slice;
concatenating the cross sectional slices; and
aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that the respective reference directions are at the same angular orientation within the object data set.

17. (New) The method of claim 16, wherein determining the reference

direction in each cross sectional slice comprises:

determining an initial reference direction in the initial cross sectional slice, and
deriving a reference direction in the at least one further cross sectional slice from the
initial reference direction by propagation.

18. (New) The method as in claim 17, wherein the determined initial
reference direction is propagated directly into each of the at least one further cross
sectional slice.